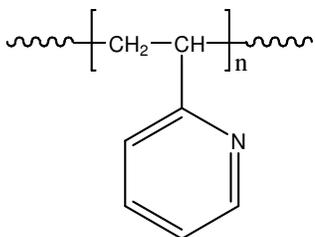


Sample Name: Poly(2-vinyl pyridine)

Sample #: P18193-2VP

### Structure:

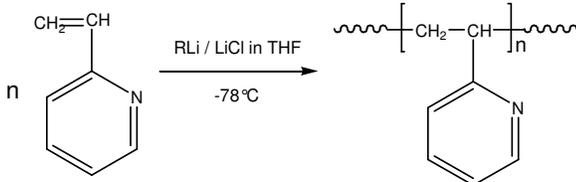


### Composition:

$M_n \times 10^3$	PDI
16.5	1.9

### Synthesis Procedure:

Poly(2-vinyl pyridine) is obtained by living anionic polymerization of 2-vinyl pyridine using an adduct of *Sec.* butyllithium and diphenyl ethylene-LiCl. Polymerization is carried out in THF at  $-78$  °C. Polymerization reaction is terminated using degassed methanol. The reaction scheme is illustrated as follows:



### Characterization:

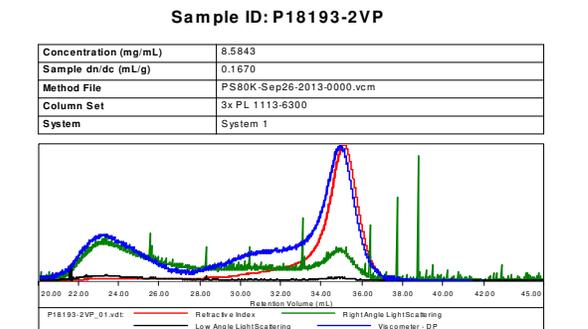
The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used with triple detectors from Viscotek Co.

Thermal analysis was performed on TA Instruments Q100 differential scanning calorimeter (DSC) under a nitrogen atmosphere. The glass transition temperature ( $T_g$ ) of the polymer was measured at a scan rate of  $10^\circ C/min$  shortly after creating thermal history of the sample.

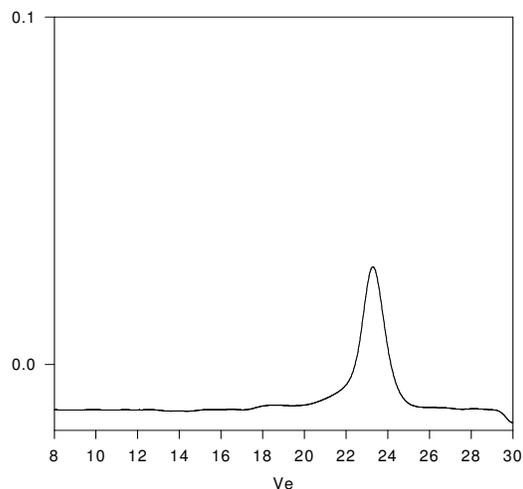
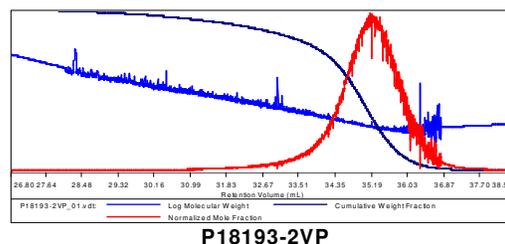
### Solubility:

Poly 2 vinylpyridine is soluble in DMF, THF, toluene, methanol, ethanol and  $CHCl_3$ . It precipitates from water and hexanes, ether.

### SEC elugram of the polymer:



Sample	$M_n$	$M_w$	$M_p$	$M_w/M_n$	IV
P18193-2VP_01.vdt	16,677	32,921	13,469	1.974	0.1505



Size exclusion chromatography of poly(2-vinylpyridine) in THF  
 $M_n=16,500$ ,  $M_w=33,000$ ,  $PI=1.9$   
 $dn/dc$  in THF at  $35^\circ C$ : 0.167ml/g

### Relationship between $T_g$ and $M_n$ of P2VP:

